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ABSTRACT

This study explores an endeavor by the Ohio Consortium for Portfolio Development to assess preservice teachers' reflectivity as demonstrated through the development of professional portfolios. The first section of this paper presents the demographic information of the study, explaining the consortium derivation, purpose, and interrater format. The second section discusses the methodology and findings, and the final section contains conclusions, recommendations, and implications. The study investigated nine research questions designed to analyze the process of reflectivity scoring, the relationships between reflectivity scores and selected variables, and the percent of agreement among portfolio raters. Findings indicate that the preservice teachers' reflectivity scores, based on analysis of portfolios, were independent of student grade point average and institutional affiliation. The reflectivity scores were not independent of course grades and maturity of students, nor were they independent of the preassessment ratings and committee experience of faculty evaluators. The data appeared to indicate agreement on rating student portfolios by faculty members. Wright State University, Central State University, and University of Dayton comprise the Ohio Consortium for Portfolio Development. Twenty-six references are listed. (IAH)

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PORTFOLIO STRUCTURE AND STUDENT PROFILES: AN ANALYSIS OF EDUCATION STUDENT PORTFOLIO REFLECTIVITY SCORES

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PORTFOLIO STRUCTURE AND STUDENT PROFILES:
An Analysis of Education Student Portfolio Reflectivity Scores

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Those who investigate teaching are involved in concerted attempts to understand the phenomena of teaching, to learn how to improve performance, and to discover better ways of preparing individuals who wish to teach. (Shulman, 'Paradigms and Research programs in the Study of Teaching: A Contemporary Perspective" in The Handbook of Research on Teaching (1986, p.3).

PORTFOLIO STRUCTURE AND STUDENT PROFILES: AN ANALYSIS OF EDUCATION STUDENT PORTFOLIO REFLECTIVITY SCORES

Concern for education, teaching and schools makes the 1990's a time for educational researchers to document the connection between philosophy (what we say), substance (what we do) and accountability (the end product). Educational process should be measureable. An emerging viable educational tool is reflectivity. The surfacing of reflectivity as a conceptual thrust for teachers enable classroom leaders to critically interpret instruction. As Bullough (1989,p. 15) explains "Reflectivity as a guiding ideal for program development is rapidly on its way to enjoying unprecedented status among teacher educators." Research is lacking to ascertain the relationship between reflectivity and traditional teacher assessment methodologies. An effort is under way to analyze reflectivity of teacher education students. The following study explores a consortium's endeavor to assess pre-service teachers' reflectivity as demonstrated through the development of professional portfolios.

This paper is divided into three sections. The first section presents the demographic information of the study, explaining the consortium derivation, purpose and inter-rater format. The second section discusses the methodology and findings. The final portion of the paper contains conclusions, recommendations and implications.

DEMOGRAPHY

This reflectivity study effort is directed by the Ohio Consortium for Portfolio Development. The Ohio Consortium includes three demographically diverse Universities. Wright State University is a metropolitan university with an atypical population composed of many first generation Appalachian students, a significant population of mature attendees and largely commuter based (approximately 17,000 students). The University of Dayton (affliliated with the Catholic Church) is the states' private comprehensive university and has a middle-class

student population (approximately 10,000 students). Central State University is an historically black institution (approximatelty 2,800 students). The Ohio Consortium draws its membership from the three institutions' education faculty.

The consortium evolved from the Stanford Teacher Assessment Project funded by the Carnegie Foundation. The Assessment Project began in 1987. Stanford's Lee Shulman organized a national research program attempting to develop prototypes for teacher assessment that might serve as representative models for the new National Board of Professional Teaching Standards. Also, it was hoped that the research would expand the national vision of how teachers might demonstrate proficiency.

The project was organized in response to an invitation by Lee Shulman, director of the Teacher Assessment Project located at Stanford University, to develop a process for increasing reflectivity skills of first year teachers. The Assessment Project requested that selected universities and school systems (especially those with significant minority enrollments) examine the validity of alternative modes of teacher assessment and their potential impact on teacher education and teacher induction programs. The Ohio Consortium decided to focus its energies on portfolios. This effort is centered in introductory teacher education courses.

PORTFOLIOS

Portfolios have a significant history in higher education. They have been employed in evaluating students' life experiences in order to award college credit. The professional fields of architecture and art education programs have a long tradition of using them. More recently, medical, legal, and business preparation programs have adopted the portfoliio as a means of assisting students with career planning. (See, for instance, Burnett, 1985; Clark & Zimmerman, 1983; Curtis and others, 1985; Elbow & Balanoff, 1986; Soares & Goldgehn, 1985; Zenoff & Barron, 1983.) They have also been used in teacher education programs to evaluate teacher trainees. Several states have made portfolios a part of the routine teacher evaluation process (for instance, Furthwengler, 1985 and Terry & Eade, 1983). Shulman's work on teacher assessment included experimentation with porfolios because they offer both a

broader and more indepth picture of a teacher's thinking and behavior than the traditional paper and pencil evaluations.

Portfolios appealed to the Consortium members for two reasons. They can serve both product and process functions. As products, they can demonstrate a student's or teacher's work to peers, university faculty, and employers (including prospective employers). For teacher education students they constitute a record of achievements which is richer and more illustrative than a traditional transcript could be. But portfolios are more than products; they also are a process. It is as a process that portfolios can be significant in developing reflection among teacher education students and teachers. When students and teachers make decisions about the way in which they organize portfolios, they need to reflect about their understanding of professional roles and responsibilities. The infusion of individual values into each institution's programs is an additional benefit for all involved.

To facilitate reflection, the representatives of the consortium universities directed their teacher education students, beginning in the 1988-1989 school year, to develop portfolios. Several procedural components were followed by all universities. First, students were requested to place in their portfolios evidence from courses or from other experiences which they believed indicated growth in five categories, presented by Shulman, Haertel, and Bird, 1988, pp. 43-44 (See Table 1.)

Second, students at the three universities were provided suggestions about possible types of evidence that might be included as entries (e.g., evaluation of a field experience from a cooperating teacher, a research paper, a lesson plan, tape recording of a lesson, etc.).

Third, and perhaps most essential, students were asked to demonstrate reflectivity on the evidence they included. This justification could take place in at least two complementary ways. First, the students could explain in writing what the evidence indicated in relation to the category. Second, the students could include the written observations of a peer, a professor, or a cooperating teacher about what the evidence demonstrated.

Table 1
Shulman, Haertel and Bird
Five Categories

Category	Explanation
1. Professional Responsibility	*The teacher is responsible to several parties (e.g. parents, students, community, etc.), and he or she is also responsible for continuous improvement of teaching, cultivating an educative manner, and developing a thoughtful pursuit of specific purposes of teaching.*
2. Command of Subject Matter	*Subject matter is a field of activity, a cluster of ways of knowing how to distinguish what is good, true, and beautiful from what is not, a conceptual structure, a body of information and skills.*
3. Content-specific Pedagogy	*The teacher must convey the substance and value of a given subject matter to students. This requires the performance of content-specific representations and academic tasks which may be accomplished by an array of content-specific materials and media.*
4. Class Organization and Management	*The teacher must arrange the content as a workable program of action for the class, define a structure of participation in class activity, establish a fair and productive system of expectations and routines, and handle class logistics.*
5. Student-specific Pedagogy	*The teacher must work with students as individual persons in order to promote each student's engagement with the substance of the class, provide practice, arrange feedback, and promote the satisfactory consummation of each activity.*

While all three universities agreed to employ the categories of portfolio entries, the inclusion of justifications, and the rating scale; it was decided to implement the portfolio process in different ways. A brief description of each university's approach follows:

- Central State University began the Portfolio Project as an experimental program and as a course requirement in the entry level Introduction to Education course. The purpose of the

portfolio as a course requirement was to permit students to collect and reflect on works in courses across the curricula, and to become self-starters during their pre-service program. Each subsequent term in which this course is offered, students are required to prepare portfolios.

- The University of Dayton instituted an experimental program in 1988 which integrated its general education courses within teacher education courses. Each year approximately twenty-five first-year Elementary Education students enroll in the experimental program. These students were asked to voluntarily develop portfolios and continue the process throughout their four years of undergraduate education. Although portfolios were not a course requirement, students reviewed the content and organization with their mentor/advisor. Students were told when they met with their advisor/mentor to evaluate their progress toward becoming a teacher decision maker by assessing the portfolio. Students knew that their portfolio would be used in the required capstone foundation course.
- Wright State University initiated portfolio development in the fall of 1988 as a total program. All beginning teacher education students start their portfolios in the first education course. Portfolios were required and assessed throughout the various foundations, methods and student teaching phases. The portfolios were viewed as a process tool to demonstrate professional growth and development in problem solving.

Procedual components were refined over a three year period at each of the institutions. By the third year of the project the three institutions felt secure in the portfolio program and believed their students' portfolios could be analyzed.

METHODOLOGY

Consortium Retreat: Rationale

As stated previously, differences exist in student demographics among the three universitities in the Consortium. In addition the universities utilize varying approaches to the portfolio development process (i.e., the number and scope of courses into which portfolios are

integrated; numbers of students developing portfolios; and portfolio assessment procedures used by individual faculty.) Given these differences, the Consortium decided to conduct a retreat to explore a general framework for assessing levels of reflection in education student's portfolios. Consortium members were particularly interested in developing inter-rater reliability in rating portfolios in keeping with the overall project goal of teacher assessment, while allowing each university to maintain its individual focus.

Table 2
Levels of Reflection

Levels	Explanation
Level 1	**Heavy focus on specific classroom techniques that enable instructional objectives to be achieved.* **No questioning of teacher objectives is evidenced.*
Level II	**Moderate focus on specific classroom techniques that enable instructional objectives to be achieved.* **Some questioning of teaching objectives is evidenced.*
Level III	**Limited focus on specific classroom techniques that enable instructional objectives to be achieved.* **Some evidence that professional knowledge is viewed as problematic, not absolute.* **Some evidence that the individual is able to assess the educational and psychological implications and consequences of teaching decisions and actions.*
Level IV	**Limited focus on specific classroom techniques that enable instructional objectives to be achieved.* **Substantial evidence that knowledge is viewed as problematic, not as absolute.* **Substantial evidence of the individual critically assessing the educational, aesthetic, and psychological nature of teaching actions and beliefs.*
Level V	**Limited focus on teaching technique.* **Substantial evidence that the individual can critically assess his/her own beliefs and actions.* **Clear evidence that the individual considers salient ethical and political issues in examining classroom practices (e.g.,social justice, equality, etc.)*

Consortium Retreat: Training

On the morning of the analysis, consortium members were trained in understanding and assessment of levels of reflection and use of the Portfolio Analysis Guide Form. The conceptual framework for assessing the portfolios consisted of five levels of reflectivity adapted from the work of Max Van Manen (1977). The Van Manen Levels (I, III, and V) were expanded to include two transition levels (II and IV, see Table 2 on the previous page), resulting in an Analysis Guide (Appendix A).

The attending consortium membership reviewed the Portfolio Analysis Guide Form (see Appendix A). The group agreed to rate the portfolios wholistically, rather than by individual sections or entries. The rating form requested raters to provide not only an overall rating level, but also a rationale for the rating, exemplary evidence, and themes evident in the portfolios.

The raters considered three pieces of evidence from portfolios and shared their perceptions of levels of reflection demonstrated. At this point the group felt sufficiently comfortable with the rating process to begin the analysis.

Consortium Retreat: Rating

A total of twenty-eight portfolios were submitted: Central State University, ten portfolios pre-rated high (four), medium (three), and low (three); The University of Dayton, eight portfolios pre-rated high (three), medium (three), and low (two); Wright State University, ten portfolios pre-rated high (four), medium (four), and low (two). Of the twenty-eight portfolios, eleven were rated high, ten medium, and seven low.

At the completion of the faculty training/rating session, the group worked in five teams of two for approximately four hours to analyze the portfolios. Four of the teams rated five portfolios each (from CSU and WSU), while one team rated the eight UD portfolios. Rating

teams were inter-institutional, with each new member of the Consortium paired with a senior member. One rating team consisted of two senior members. Each team rated portfolios from an institution other than their own, and had no knowledge of the pre-ratings assigned by various faculty members. Team members analyzed the portfolios individually and then engaged in a dialogue with their partner to discuss the rationale for their ratings.

At the completion of the analysis, the committee came together to review the process and results. Discussion centered around the five questions in Table 3.

Table 3
Consortium Training
Brainstorming Questions

Question #	Question
1.	*How did the process work or not work?*
2.	*What are your conclusions about the levels of reflectivity demonstrated by the students?*
3.	*What conclusions can be reached about the curriculum of the university, etc.?*
4.	*What themes emerged? That is, what conceptual frameworks or organizational similarities were apparent?*
5.	*What recommendations should be made to the University regarding portfolios and curriculum in relation to reflection?*

Consortium Retreat: Research Design

The research design was informal in nature. This was an action research project designed to study the specific relationships, if any, between portfolio student reflectivity scores and various student classification and assessment scores as shown in Table 4 on the following page. Action research describes the study activities and characteristics of students within a self-contained classroom or school (Isaac & Michael, 1987).

Table 4
Action Research Paradigm

Student Classification Criteria	pre	post
Institution Affiliation	-----> X --->	O_1
Grade Point Average	-----> X --->	O_2
Course Grade	-----> X --->	O_3
Student Maturity	-----> X --->	O_4
Pre Assessment Rating	-----> X --->	O_5
Reflectivity Scores	-----> X --->	O_6

Note: The symbol X represents the various treatments and intervention strategies used within the project. The symbol O represents the observation measurements conducted for each criteria.

Consortium Retreat: Research Questions

The following research questions were developed to guide the collection, analysis and reporting of data (Leedy, 1980).

1. What were memberships perceptions and observations of the process and products used during the consortium's retreat?
2. What demographic characteristics describe the sample population?
3. To what extent are reflectivity scores independent of student institutional affiliation?
4. To what extent are reflectivity scores independent of student grade point average?
5. To what extent are reflectivity scores independent of student education course scores?
6. To what extent are reflectivity scores independent of student maturity (i.e. typical vs atypical)?
7. To what extent are reflectivity scores independent of student pre-assessment rating?
8. To what extent are reflectivity scores independent of faculty involvement in the portfolio project?
9. To what extent do experienced faculty reflectivity scores agree with novice faculty reflectivity scores?

Sample Selection

Purposeful sampling procedures were used by the researchers in the identification of the research sample. Portfolio Consortium Committee members and instructors were determined to be the best judge of whom to hand pick the sample base upon the stratification criteria (Fink and Kosecoff, 1985).

One week prior to the retreat, Consortium members were requested to submit ten portfolios per institution. A stratified sample was generated as members pre-rated the portfolios of their respective institutions according to the following guidelines: outstanding (high), average (medium), rather poor (low). The group agreed to include fairly equal numbers of portfolios in each category. In all cases faculty who pre-rated the portfolios taught the course(s) in which students developed portfolios, and were familiar with the students' work.

Consortium Retreat: Findings

When the group came together to review the results, several perceptions and observations were identified. Table 5 on the next page presents a summary of these findings.

Research question one was answered through the collection of demographic data on each selected portfolio student. Information was collected to ascertain student institutional affiliation, overall grade point average, education course grade(s), student maturity, and instructor pre-assessment rating based on classroom performance and interaction. The demographic data collected as part of this research was analyzed through the central tendency measures and summary descriptive statistics as presented on the next page in Table 6. In analyzing the findings it was found that: (a) The three institutions had an evenly distributed portfolio representation. Althougn the institutions had varying numbers of students enrolled in their respective programs, the researchers desired equal numbers in the reflectivity analysis. Therefore the sample followed a purposeful sampling procedure and yielded a relatively even distribution among high, medium and low pre-assessment ratings from course professors. (b) The majority of students (71.4%) had a 3.00 GPA or better. While 57.1

earned an A grade and 42.9 received a lower grade. Student maturity levels varied from 75% being identified as typical students and 25% as atypical.

Table 5
Retreat Perceptions
and Observations

#	Statement
1.	*The "Reflective statements" (i.e. comments students make about the contents of their portfolio) were often at a lower level of reflection than the evidence itself.*
2.	*The Portfolio Analysis Guide may be more useful if, rather than a lengthy paragraph description of each level, there were brief highlights of key differences between levels.*
3.	*Reading a number of portfolios enabled the raters to more easily understand the differences. For example, after having read a few portfolios it was possible to rank them in categories according to the levels.*
4.	*Raters found themselves concentrating on the depth of descriptions and analysis. That is, that which semed to distinguish one level from the next was more a question of depth than of how many commonplaces the student considered*
5.	*As the team reviewed the background and ages of the students, it seemed that the older students tended to perform at the higher levels of reflection even if they were just beginning the teacher education program.*
6.	*Raters looked to see if students provided criteria for their assessment. The more extensive and relevant the criteria, the higher the raters ranked the portfolio.*
7.	*Raters looked for a number of pieces of evidence for awarding a particular score.*
8.	*Themes that emerge could be student themes, university themes, or student-university themes.*

(OCPD Minutes, 1990.)

Table 6
Student Demographic Characteristics

Student Characteristics	Percent
Institution Affiliation	
Central State University	35.7
University of Dayton	28.6
Wright State University	35.7
Grade Point Average (mean = 3.19)	
3.00 and above	71.4
below 3.00	28.6
Grade in Education Course(s)	
at least an A grade	57.1
below an A grade	42.9
Student Maturity	
typical student	75.0
atypical student	25.0
Pre Assessment Rating	
high	39.3
medium	35.7
low	25.0

N = 28

The researchers developed null hypothesis statements to investigate research questions 3-8 . Research hypotheses were then developed to further investigate the various research questions, as found in Table 7.

The researchers recorded the average reflectivity scores for each evaluated portfolio by summing the two scores and dividing by two. The average scores were then divided into two reflectivity categories. Reflectivity scores of 2.00 and below made up the first category and reflectivity scores greater than 2.00 made up category two. Categories were also developed for each student demographic characteristic to enable the researchers to develop nominal data sets to test the constructed research hypothesis statements (Anderson and Burns,1989). Table 8 was prepared to define the categorical make up for each data set.

Table 7
Study Hypothesis

Hypothesis	Statement
Null	*Education undergraduate student reflectivity scores are independent of traditional student classification and rating scores.*
H_1	*Reflectivity Scores are independent of institution affiliation.*
H_2	*Reflectivity Scores are independent of education course grade(s).*
H_3	*Reflectivity Scores are independent of education course grade(s).*
H_4	*Reflectivity Scores are independent of student maturity.*
H_5	*Reflectivity Scores are independent of pre assessment rating.*
H_6	*Reflectivity Scores are independent of committee member experience.*

Table 8
Nominal Data Set Categorical Criteria by Characteristic

Research Characteristic	Number	Criteria
Institutional Affiliation	3	CSU/UD/WSU
Grade Point Average	2	3.00/3.00 & <
Course Grade	2	A/< A
Student Maturity	2	typical/atypical
Pre Assessment Rating	3	high/middle/low
Reflectivity Score	2	1 & 2/3 & 4
Average Reflectivity Score	2	2.00< 1 to 2.00
Committee Experience	2	much exp./little exp.

Tests of significance were computed using the chi-square (X^2) test of independence. The scores, converted to frequency percentages, were compared to expected population frequency distributions utilizing WSU IBM 3090 main frame hardware and SAS software (SAS Institute Inc., 1985). The SAS program automatically defaults to a Fischer Exact for 2 by 2

tables (SAS Institute Inc., 1985). Because of the informal nature of the research a less rigorous Alpha level of 0.10 was selected (Fitz-Gibbon and Morris, 1978). These findings and comparisons are presented in Table 9.

Table 9
Summary of Tests of Significance

Research Hypothesis		N	df	X^2	Prob
H_1:	RS is independent of institution affiliation	28	2	1.050	0.592
H_2:	RS is independent of student GPA	28	1	1.417	0.234
H_3:	RS is independent of ed course grade	28	1	4.215	0.040*
H_4:	RS is independent of student maturity	28	1	8.400	0.004*
H_5:	RS is independent of pre rating	28	2	11.327	0.003*
H_6:	RS is independent of committee experience	23	1	13.719	0.000*

Notes: ** = significant finding => prob of 0.10*
RS = Student Reflectivity Score

It was found that four of the research hypotheses could be rejected at the 0.10 level of significance or less. In fact all four were significant at less than Alpha = 0.05. The research hypothesis investigating the variables institution affiliation and student GPA could not be rejected. Those hypotheses investigating education course grade, student maturity, pre-assessment rating and committee experience were rejected (Dillehay, Graham and Mercer, 1990).

The last research question investigated by the authors was concerned about the degree of agreement between the researched Portfolio rating teams, e. g. experienced committee members vs. novice committee members. Reliability is the degree to which a test measures something consistently (Oosterhof, 1990). The measure of reliability utilized by the researchers was Percent of Agreement. It was determined that experienced

and novice committee member reflectivity scores were in 78.26 percent agreement as shown in Table 10.

Table 10
Percent of Agreement

N	Number Agree	Number Disagree
23	18	5

Percent of Agreement = 78.26%

CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

In summary, this study investigated nine research questions designed to analyze the process of relectivity scoring, the relationships between reflectivity scores and selected variables, and the percent of agreement between portfolio raters. Purposive sampling methodology was used to identify the sample pool of portfolios to be rated. The study is also subject to the following limitations: (1) small sample size which required the collapsing of the variable categories into two by two matrixes where ever possible; (2) the degree to which the raters are able to accurately apply the heuristic definitions of reflectivity to each reflectivity score; and (3) the ability of the institutional raters to accurately predict student reflectivity based upon classroom observation. The authors believe that the following conclusions are warrented based on the observations and findings resulting from this study.

Six of the nine questions were statisically tested to identify whether the variables were associated with reflectivity. Within the limitation of this study, the findings confirmed that reflectivity scores were independent of some variables and dependant on others (See Table 9).

Hypothesis one (H_1) stating that "Reflectivity Scores are independent of institutional affiliation" and hypothesis two (H_2) stating "Reflectivity scores are

independent of student grade point average" could not be rejected. The findings for H1 were anticipated by the authors. The portfolio project was designed to yield results that would be independent of institutional affiliations. The findings support the intent to create a process relatively free of cultural bias. Central State's black students portfolios received scores as high or higher than the other two institutions. This is encouraging since minority discrimination has been associated with many of the traditional assessment strategies currently used.

The second hypothesis finding was unanticipated, The authors had suggested that reflectivity should parallel grade point average (i.e. high reflectivity equals high grade point average). Additional study should be undertaken to better understand this unexpected result. The authors suggest that students can receive high course grades and not be expected to be highly reflective in their portfolio writing. However, students with low course grades demonstrate low reflectivity consistently. Further research is needed to explore course grade assignments to ascertain if reflectivity is required. Perhaps students are assigned closed projects demanding little or no reflective thought. If that is the case students could complete classes and obtain high grades without developing reflection.

The remaining hypotheses were rejected. Therefore the researchers concluded that reflectivity scores were not independant of course grades, maturity, pre-rating, and committee experience. Hypothesis three ($H_{3)}$ stating that "Reflectivity scores are independent of education course grades" was rejected. An inspection of data presented in the Chi Square contingency table revealed that a greater proportion of low reflectivity scores was associated with course grades, then would be expected from a random sample.

Hypothesis four (H_4) stating that "Reflectivity scores are independent of student maturity" was rejected. The contingency table data was reviewed and the authors observed that typical students (i.e. those metriculating into college programs directly from high school) were more likely to receive a low relfectivity score than would atypical students. This finding supported other observations that there is a strong relationship between

reflectivity and student maturity. Life experiences and exposures appear to enrich the atypical students' reflections.

Hypothesis five (H_5) stating that "Reflectivity scores are independent of pre-assessment rating" was rejected. Further review of the contingency table revealed that instructors were much better at predicting low reflectivity scores than high reflectivity scores. This can be accounted for in the finding for hypothesis H_3 which shows the relationship between course grades and reflectivity scores. Instructors appear to be better at identifying poor student performance than superior performance.

Hypothesis six (H6) stating that "Reflectivity scores are independent of committee member experience" was also rejected. Review of the last contingency table presented the authors with evidence that experienced committee members consistantly rated the reflectivity scores lower than non-experienced members. This finding is reasonable in that experienced committee members have had the opportunity to better integrate the relfectivity definitions in to their evaluation methodology.

Further research is needed to explain why some variables are independent while others appear dependent.

In analyzing research questions one (1) and nine (9) attention is directed toward the team raters. The response to question one, "What were team members observations and perceptions of the process and product used during the consortium retreat?", can be found in Table 5. Question nine, "To what extent do experienced faculty's reflectivity scores agree with novice faculty reflectivity scores?" results appear in Table 10. There was 78.26% agreement indicating a high degree of agreement between experienced and inexperienced portfolio consortium members. The results might signify that the consortium training and rating process and product for experienced and novice members fairly equaled and enhanced raters' performance.

While generalizations must be made with caution, the data appeared to indicate agreement on rating student portfolios by faculty teams. Further studies are needed on

inter-rater reliability and statements of reflection and should be conducted with larger samples. A research design using longitudinal data from experimental groups is recommended to detemine groqth in reflection throughout the teacher education program. Utilization of National Teacher Examination (NTE) scores as an added variable would strengthen the design.

Implications of portfolio research are numerous. Portfolio as a viable assessment tool is currently being researched in K-12 student populations (as in Vermont), in liberal arts programs and graduate studies. Development of reflective portfolios could result in accurate and in-depth assessment procedures to complement traditional measures.

APPENDIX A

Portfolio Analysis Guide

Student Name: _____
Student's Institution: _____
Rater: _____

Level :

Rationale :

Best Evidence (page number and example quote):

Themes:

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